IN THE CLAIMS:

Kindly cancel claims 1 through 30 without prejudice.

Please add new claims 31 through 70, as shown below.

--31. (Added) A silica-filled Flip-Chip-Attach (FCA) encapsulant composition for use between an integrated circuit chip and an organic or ceramic substrate, comprising a "core-shell" substance including a fine powder, whose particles each have an outer shell with a glass transition temperature above room temperature and a core with a glass transition temperature below room temperature.

--32. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, wherein said substrate comprises a ceramic material, and the encapsulant composition has a coefficient of thermal expansion (CTE) approximately three times that of said ceramic substrate.

--33. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, wherein silica fill is in a range

of between approximately 40 and 60 percent by weight of the total encapsulant composition.

--34. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, including a silane component.

--35. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, including at least one epoxy resin material selected from a group of epoxy resin materials consisting of: polyimides, cyanate esters, and combinations thereof.

--36. (Added) A silica-filled flip-chip-attach encapsulant composition comprising by weight:

a cycloaliphatic epoxy resin of between approximately 14 and 25 percent;

a methyl-hexahydrophthalic anhydride of between approximately 14 and 25 percent;

at least one aliphatic polyol substance of between approximately 0 and 2 percent;

2-ethyl-4-methylimidazole of less than approximately 1 percent;

a filler powder comprising silica (SiO_2) in a range of between approximately 40 and 60 percent, with a filler particle size being less than approximately 25 microns; and

an epoxy silane of approximately 0.3 and 0.5 percent.

--37. (Added) The silica-filled FCA encapsulant composition in accordance with claim 35, wherein said epoxy resin comprises a cycloaliphatic epoxy resin in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--38. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, comprising a cycloaliphatic epoxy resin in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--39. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, comprising a cycloaliphatic epoxy resin and a methyl-hexa-hydrophthalic anhydride, each respectively in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--40. (Added) The silica-filled FCA encapsulant composition in accordance with claim 39, including a silane component.

--41. (Added) The silica-filled FCA encapsulant composition in accordance with claim 31, wherein said composition has a toughness of between approximately 800 and 2,500 psi-$in^{1/2}$.

--42. (Added) A silica-filled flip-chip-attach encapsulant composition for use between an integrated circuit chip and a ceramic or organic substrate, comprising:

a) silica fill in a range of approximately between 40 and 60 percent by weight of the total encapsulant composition; and

b) an epoxy resin and an anhydride, each respectively in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--43. (Added) The silica-filled FCA encapsulant composition in accordance with claim 42, wherein said composition has a toughness of between approximately 800 and 2,500 psi-$in^{1/2}$.

--44. (Added) The silica-filled FCA encapsulant composition in accordance with claim 42, including a silane component.

--45. (Added) The silica-filled FCA encapsulant composition in accordance with claim 42, wherein said epoxy resin comprises a cycloaliphatic epoxy resin.

--46. (Added) The silica-filled FCA encapsulant composition in accordance with claim 42, wherein said anhydride comprises a methyl-hexa-hydrophthalic anhydride.

--47. (Added) A silica-filled flip-chip-attach encapsulant composition for use between an integrated circuit chip and a ceramic or organic substrate, comprising:

a) silica fill in a range of approximately between 40 and 60 percent by weight of the total encapsulant composition; and

b) a cycloaliphatic epoxy resin and a methyl-hexahydrophthalic anhydride both respectively in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--48. (Added) The silica-filled FCA encapsulant composition in accordance with claim 47, wherein said encapsulant composition has a toughness of approximately between 800 and 2,500 psi-$in^{1/2}$.

--49. (Added) The silica-filled FCA encapsulant composition in accordance with claim 47, including a silane component.

--50. (Added) The silica-filled FCA encapsulant composition in accordance with claim 47, including 2-ethyl-4-methylimidazole as a catalyst.

--51. (Added) The silica-filled FCA encapsulant composition in accordance with claim 47, further comprising a wetting agent.

--52. (Added) A method of encapsulating an integrated circuit (IC) chip and an organic substrate in order to form a chip carrier, the steps comprising:

applying a silica-filled encapsulant composition to an IC chip and an organic substrate, said composition comprising particles having a core material with a glass transition temperature, T_g, below room temperature and a core-shell material substantially surrounding said core material, said core-shell material having a T_g above room temperature;

curing said encapsulated IC chip and said substrate; and

reflowing solder joints between said IC chip and said substrate.

--53. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 52, wherein silica

fill is in a range of between approximately 40 and 60 percent by weight of the total encapsulant composition.

--54. (Added) The method of encapsulating an IC chip and a ceramic substrate associated therewith to form a flip-chip-attach (FCA) configuration in accordance with claim 52, wherein said encapsulant composition has a coefficient of thermal expansion (CTE) approximately three times that of said ceramic substrate.

--55. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 52, including a silane component.

--56. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 52, including at least one epoxy resin selected from the group of epoxy resins consisting of: polyimides, cyanate esters, and combinations thereof.

--57. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 55, wherein said epoxy resin comprises a cycloaliphatic epoxy resin.

A1 cont.

--58. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 55, wherein said epoxy resin comprises a cycloaliphatic epoxy resin in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--59. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 52, wherein said composition comprises a cycloaliphatic epoxy resin in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--60. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 52, comprising a cycloaliphatic epoxy resin and a methyl-hexa-hydrophthalic anhydride, each respectively in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--61. (Added) The method of encapsulating an IC chip and an organic substrate in accordance with claim 59, including a silane component.

--62. (Added) The method of encapsulating an integrated circuit (IC) chip and a ceramic substrate, comprising the steps of:

applying a silica-filled encapsulant composition to an IC chip and a ceramic substrate, said composition comprising particles having a core material with a glass transition temperature, T_g, below room temperature and a core-shell material substantially surrounding said core material, said core-shell material having a T_g above room temperature; and

curing said encapsulated IC chip and substrate.

--63. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 60, wherein silica fill is in a range of between approximately 40 and 60 percent by weight of the total encapsulant composition.

--64. (Added) The method of encapsulating an IC chip and a ceramic substrate to form a flip-chip-attach (FCA) configuration in accordance with claim 60, wherein said encapsulant composition has a coefficient of thermal expansion (CTE) approximately three times that of said ceramic substrate.

--65. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 63, including a silane component.

--66. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 60, including at least one epoxy resin selected from the group of epoxy resins consisting of: polyimides, cyanate esters, and combinations thereof.

--67. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 65, wherein said epoxy resin comprises a cycloaliphatic epoxy resin.

--68. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 65, wherein said

epoxy resin comprises a cycloaliphatic epoxy resin in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

a1 cont.

--69. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 60, wherein said composition comprises a cycloaliphatic epoxy resin in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.

--70. (Added) The method of encapsulating an IC chip and a ceramic substrate in accordance with claim 60, comprising a cycloaliphatic epoxy resin and a methyl-hexa-hydrophthalic anhydride both respectively in an approximate weight range of between 14 and 25 percent by weight of the total encapsulant composition.--

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R E M A R K S

Attorneys for the Applicant wish to thank Examiner Margaret G. Moore for her careful and diligent review of this